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Research Article

### DEMOGRAPHIC HETEROGENICITY OF COVID 19 IN PUNJAB, PAKISTAN; A SINGLE CENTRE STUDY

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**Abstract:**

**Background:** Coronavirus appeared in China with unknown etiology. It was treated as a case of pneumonia at the end of 2019. Novel coronavirus 19 shares many similarities with the other infections caused by SARS-CoV such as fever (98%), myalgia or fatigue (44%), dry cough (76%), dyspnea (55%) at the prodromal phase. These symptoms occurred in 2-4 days of interaction 12. Some patients have upper respiratory disorders including sore throat and shortness of breath and diarrhea during COVID-19. This research aims to explore the Covid-19 positive cases in Punjab region of Pakistan and also aims to analyze the situation through bird eye analysis from month of February to June.

**Methodology:** This retrospective cohort study was conducted in the Islamabad diagnostic center of Punjab. The majority of cases in IDC came from different regions of Punjab from different socio-economic backgrounds. Identification of SARS-CoV-2 was achieved through a real-time reverse transcription PCR assay using primers targeted at regions of the viral genome. All the statistical analysis will perform by using SPSS version 23.0. All the patients will be categorized according to their age and gender. We used a two-tail t-test and also chi-square in order to demonstrate good results.

**Results:** We did not find any significant relationship between age and symptoms of COVID-19 which proves that anyone from any age group can easily caught infection.

**Conclusion:** This study concludes that there isn't any specific co relation of COVID-19 infection with any age group and comorbidity. It can affect all ages equally and impartially to co-existing comorbids. There is no treatment found yet but still, every country forms its policies to prevent this disease. Pakistan's government announced some SOP's for its citizens in order to overcome the burden of this disease.

**Keywords:** COVID-19, Comorbidities, Common Symptoms

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**INTRODUCTION:**

Coronavirus appeared in China with unknown etiology. It was treated as a case of pneumonia at the end of 2019 [1]. Eventually, it spreads to the countrywide, and later on, frequent cases emerged into the globe. Initial samples were analyzed as a respiratory disease which was declared as pneumonia caused by unknown novel coronavirus pneumonia by the department of disease control china (DCC) [2]. This virus attacks human the respiratory system and boosts the mortality rate in the world [3]. Due to frequent cases of death, the international committee on taxonomy named this coronavirus as Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) [4,5]. Eventually, in February 2020, the World health organization declared COVID 19 as a third outbreak for the sixth public health emergency disease (SPHEC) [6,7]. A statistical report of the World health organization revealed 1,093,349 confirmed cases with 58,620 mortalities with the highest encounter in the USA, Spain, and Italy [8]. This virus affects more than 209 countries including Pakistan. The first case of COVID-19 emerged out in February in two metropolitan cities; Karachi and Islamabad [9,10]. In the month of February 20 cases were diagnosed out of 471 suspected cases. Initially, the highest number of cases observed in Sindh and Gilgit Baltistan province. All the confirmed cases had travel history especially from Iran, Syria, and European countries. In the month of April, a total of 3277 confirmed cases with 18 critical and 50 deaths were observed. Punjab was the highest target of COVID-19 with 1493 confirmed cases. Whereas, 881 cases in Sindh, 405 in Khyber Pakhtunkhwa, 191 in Baluchistan, 205 in Gilgit, and 82 cases in Federal were observed in the month of April. In the same month, Punjab had the highest mortality (15 deaths were recorded in first week of April). The number of cases increased day by day along with travel history and the history of local virus transmission [11].

Novel coronavirus 19 shares many similarities with the other infections caused by SARS-Cov such as fever (98%), myalgia or fatigue (44%), dry cough (76%), dyspnea (55%) at the prodromal phase. These symptoms occurred in 2-4 days of interaction [12]. Some patients have upper respiratory disorders including sore throat and shortness of breath and diarrhea during COVID-19 [13]. Later on, computed tomography (CT) findings revealed bilateral lung involvement in positive cases [14].

**Objectives:**

This research aims to explore the Covid-19 positive cases in Punjab region of Pakistan. This research

further aims to analyze the situation through bird eye analysis from month of February to June.

**METHODOLOGY:**

This retrospective cohort study was conducted in the Islamabad diagnostic center of Punjab. The majority of cases in IDC came from different regions of Punjab from different socio-economic backgrounds.

We included all the patients diagnosed between the months of February to June 2020. Nasopharyngeal samples were taken from all the suspected cases of SARS-COVID 19. With the clear guidelines from the Punjab ministry of health and services, we include all the patients having cough of recent onset, fever, and evidence of pneumonia for PCR testing. All the individuals who developed these symptoms were swabbed and admitted to the hospital. Patients with other diseases that increase the risk of COVID-19 are also included for the analysis.

Patients were assessed using a combination of the National Early Warning Score [14] (NEWS)<sup>15</sup> or Pediatric Early Warning Score (PEWS)<sup>16</sup>, nationally adopted tools for the assessment of acute severity of illness, and assessment by a member of the clinical team. Nasopharyngeal testing samples of suspected patients, having similar symptoms of SARS-COV 19, were sent for PCR testing in the virology department of Islamabad diagnostic center.

Identification of SARS-CoV-2 was achieved through a real-time reverse transcription PCR assay using primers targeted at regions of the viral genome. Results were achieved after a day of testing so all the clinical records were kept without knowledge of results.

The patient's information was extracted from the electronic data of the hospital including age, gender, and history of other diseases such as e of diabetes, hypertension, cardiovascular disease, cerebrovascular disease, and respiratory disease. PCR assay of Sars-Covid2 and nasopharyngeal swab along with receiving data sent to the laboratory. We further collected data on acute kidney status at the time of nasopharyngeal for examining the severity of the disease. AKI data was based on the laboratory analysis of renal function and an automated flag on the patient's electronic record. We also collected all the information on EWS (early warning score) for a better understanding of results.

All the statistical analysis will perform by using SPSS version 23.0. All the patients will be

categorized according to their age and gender. We used a two-tail t-test and also chi-square in order to demonstrate good results. We select the significant p as 0.05%. Univariate analysis of variance (ANOVA) follow by Bonferroni correction will be used to observe the changes in outcomes.

### RESULTS:

A total of 157 patients were analyzed as COVID positive from April 2020 to June 2020. All the patients were categorized according to age and sex. For a better understanding of results, patients were

classified into three major categories; Young with age range 18-35, Middle age (36-49), and above than 50 years were counted into the older age groups.

A total of 37 patients was diagnosed from the young group, 59 were from more mid and 61 were diagnosed from the older age group of our studies.

A total of 102 men population had an exposure of COVID 19 whereas only 55 females were diagnosed positively during this time interval.

Category	Male	Female	Total
Young (18-35)	59.4% (22)	40.54% (15)	23.5% (37)
Middle age (36-55)	77.9% (46)	22% (13)	37.5% (59)
Old (> 55)	55.7% (34)	44.2% (27)	38.8% (61)
Total	64.9% (102)	35% (55)	157

**Table 1:** Demographic observations of patients from April 2020 to June 2020

Patients' previous disease history was also taken from them for their treatment. We found different comorbidities among the patient which may complicate their case at any stage. From all the comorbidities, diabetes Mellitus had the highest ratio whereas 12% of cases had positive contact history. The little ratio of ischemic heart disease, hypertension, and chronic disease was also found in the study.

No co morbid	Chronic Kidney disease	Diabetes mellitus	Hypertension	Ischemic heart disease	Positive contact history
61.7% (97)	1.9% (3)	15.92% (25)	3.18% (5)	3.18% (5)	12.7% (20)

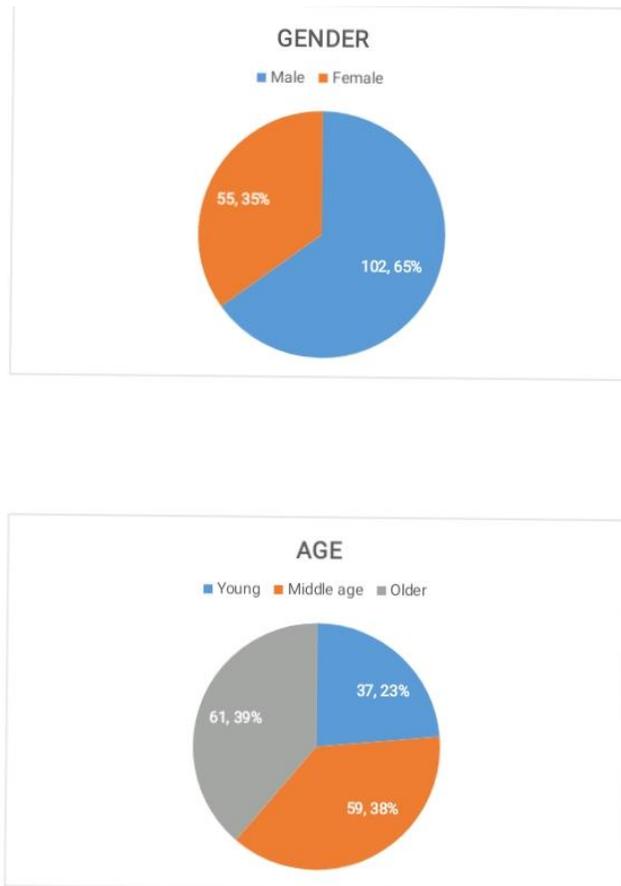
**Table 2:** Comorbidities of positive COVID-19 patients from April 2020 to June 2020

After PCR testing, some common symptoms were found in studies. The majority of the cases were asymptomatic (37.5%), whereas dry cough and fever were found as second common (33%) symptoms of COVID-19. Along with these symptoms some patients had chest pain, fever, loss of smell and taste,

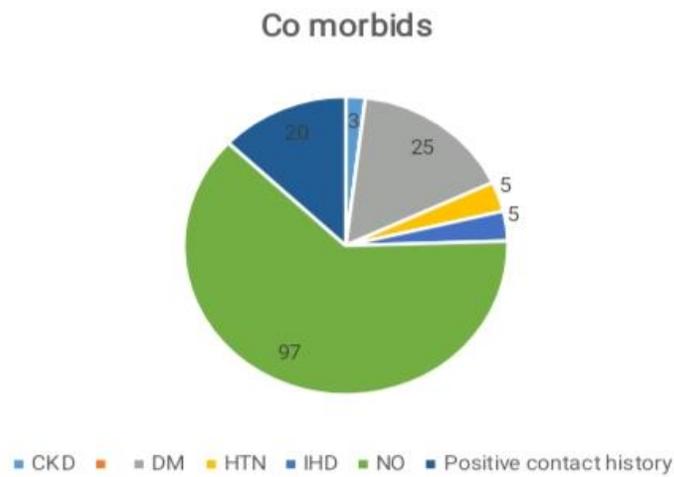
and also some have a complaint of flue during studies (2.5%, 22.29%, 5.73%, and 2.5% respectively). We did not find any significant relationship between age and symptoms of COVID-19 which proves that anyone from any age group can easily caught infection.

Category	Chest pain	Fever	Asymptomatic	Dry cough+ Fever	Loss of smell and taste	Flue	Total	p-value
Young	0% (0)	19.5% (8)	39% (16)	29.2% (12)	7.3% (3)	4.87% (2)	26.11% (41)	0.8158 (non-significant)
Middle age	1.18% (1)	27.27% (15)	38.1% (21)	29% (16)	3.6% (2)	0% (0)	35% (55)	0.8632 (non-significant)
Old	4.9% (3)	19.67% (12)	36% (22)	29.5% (18)	6.55% (4)	3.27% (2)	38.85% (61)	1 (non-significant)
Total	2.5% (4)	22.29% (35)	37.5% (59)	29.2% (46)	5.73% (9)	2.54% (4)	157	

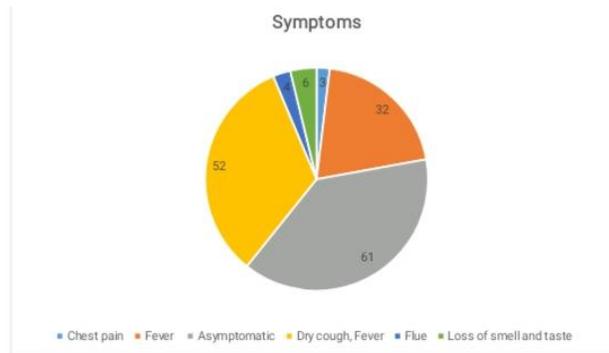
**Table 3**  
Common signs and Symptoms among patients from April 2020 to June 2020



**Figure 1:**  
Demographic observations of patients from April 2020 to June 2020



**Figure 2**  
Comorbidities of positive COVID-19 patients from April 2020 to June 2020

**Fig 3**

Common signs and Symptoms among patients from April 2020 to June 2020

### DISCUSSION:

Its widespread occurs due to person to person interaction via droplets due to coughing, sneezing. In different regions of the world, morbidity and mortality rate among females were comparatively high than men. In Spain 46.3% of men while 53.7% of women died due to the severity of coronavirus disease [17]. Their symptoms include shortness of breath, cough, fever, and flue [18]. Interestingly in Pakistan, our results are the opposite of Spain. In Pakistan, men were victims of the COVID virus in 68% cases. While the exposure of females with the disease was distinctively less (32%).

Novel coronavirus has different symptoms in different regions of the world. The severity of the disease depends on the age of the patient. In recent months mortality rate of middle age, man is highly noticeable in Pakistan [19]. The male gender is more affected by COVID 19 and more than 30% of men died in the age of 36-49 decades of their life [19]. These results are in accordance with our studies. From April to June 2020, 29% (46) middle age (including both males and females) were admitted to Islamabad diagnostic centers. During these months total of 1 individuals were diagnosed positive for COVID 19 in the Islamabad region. The majority of cases at this age interval were asymptomatic while some of them complain about the loss of smell and taste. [20] Some of them have chest pain along with fever, dry cough, body aches, sore throat at different stages of the disease. Shortness of breath with fever was also observed among the patients at the time of admission [21]. All these patient's samples were sent to PCR and after the diagnosis, they were kept into isolation for recovery. Middle age man has high outside exposure during this pandemic. This is considered one of the major reasons for high frequency among them. Among this age group, the majority of the cases had no previous travel history.

The majority of cases emerged due to the local transmission of infection especially during the interval of Eid ul Fitr. Some positive cases of COVID-19 had severe diarrhea during treatment. This element worsens the situation of the patient and their immunity strength decrease day by day which enhances the severity of COVID-19 among them [22].

In most of the countries, morbidity and mortality rate among old age group was comparatively high than Young and Middle age man [23]. Interestingly, we observed a high ratio of asymptomatic cases of old age (more than 50 years). At the initial stage of disease symptoms of older age were commonly loss of smell and taste, fever, chest pain, and runny nose. Anosmia and ageusia are considered as initial symptoms of COVID-19. Almost 40% of worldwide COVID cases had been observed with anosmia and ageusia before PCR testing<sup>22</sup>.

Muscle pain and tiredness were highly observed among the young and middle age groups while comorbidities were also reported during laboratory testing. These comorbidities play a critical role in disease progression. History of ischemic heart disease, hypertension, and chronic kidney disease was observed in some cases which leads to the severity of the disease [24]. Some of the sensitive cases were shifted to the ventilator. Patients having heart disease were considered as critical cases because chances of heart attack and ischemic stroke were comparatively high among them. During diagnosis, 15% of COVID patients had diabetes Mellitus. The levels of glycated hemoglobin (HbA1c) >9% have been linked to a 60% increased risk of hospitalization and pneumonia-related severity during bacterial infection which eventually increases the mortality rate [25]. In Italy, percentage of diabetic patients had positive corona tests which complicate their situation [26]. Singh et. Al [27] reported prevalence of comorbidities

including hypertension (21%), diabetes (11%), and CVD (7%) among COVID patients whereas Yang et. Al [28] reported 17% Hypertension, 8% diabetes, and 5% CVD along with COVID 19 among patients. These results of diabetes were quite near to our studies (15%).

### CONCLUSION:

In Pakistan, men population has high exposure to infection due to their outside interactions. This study concludes that there isn't any specific co relation of COVID-19 infection with any age group and comorbidity. It can affect all ages equally and impartially to co-existing comorbids. In addition to this the collective data is suggestive for most common symptoms such as fever and cough predominantly. Apart from this most commonly asymptomatic cases are those with positive contact history. Other symptoms i.e myalgias, anosmia, chest pain and ageusia are less commonly observed. There is no treatment found yet but still, every country forms its policies to prevent this disease. Pakistan's government announced some SOP's for its citizens in order to overcome the burden of this disease. Pakistan is a developing state with less economic and healthcare opportunities. By taking the precautionary measures of this disorder, the ratio of the disease may fall down in the upcoming months.

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